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2-22-04

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Title of Invention: Improved Emergency Vehicle Support Kit

This application is a continuation in part of U.S. Patent Application No. 10/252,255.

(1) This application is a continuation in part of U.S. Patent Application No. 10/252,255.

(2) My invention relates to a kit for support of a crashed motor vehicle or weakened structure in which trapped persons must be quickly rescued to save their lives. There is a telescoping device with a cylinder and pistons which extend for rigid supporting length. More particularly, this invention relates to a kit with a manually operated telescoping device, a support base plate and upper interchangeable attachments. The telescoping device inserts with the support base plate vertically or at an angle to prop a vehicle or damaged building. The distal attachments grasp or pierce a portion of the vehicle or building for a support point.

(3) The first and second pistons connect to each other and the lowermost cylinder by knurled collars with interior circular lips. First and second pistons telescope out of the lowermost cylinder and are specifically engineered for support of a crashed motor vehicle or weakened building structure in an emergency. The cylinder and the first piston comprises a knurled collar with an interior circular lip.

(4) The second piston also comprises an uppermost distal universal connector. This universal connector interchangeably connects other kit attachments to the telescoping device at its distal second piston end. These other attachments grasp portions of the crashed vehicle or weakened building structure. My knurled circular connectors between

the cylinder and first piston, and first and second pistons, ensure that the pistons do not fall from the cylinder or accidentally disassemble.

(5) The prior art contains models of vehicle kits used in emergency situations. The Res-Q-Jack™ Vehicle stabilization comprises a primary jacking device and two companion jacks to create three dimensional stabilization points around an overturned vehicle's edge. The companion jacks consist of telescopic perforated steel tubes for height adjustment in two inch increments. Attached to the base plates area are a pair of two inch wide nylon straps, each with an aluminum cam buckle and metal hook.

(6) When all Res-Q-Jack™ components are in place, the operator pulls on the strap to release the cam buckle, thereby tensioning the stabilization system. The inside straps of each companion can be joined to further resist torsion vehicle movement. The jacking device, consists of a 78- inch fixed length steel tube with a swivel base plate, two straps and cam buckles. The actual Res-Q-Jack™ unit slides onto this post and once in place is cranked up or down. The rolled metal lip of the Res-Q-Jack catches the vehicle's rocker channel edge.

(7) The disadvantage of the Res-Q-Jack™ Vehicle stabilization kit is that the tubing's square cross–section is a weaker structure than that of circular cylinders and pistons. Furthermore, the base plate is a foot- like structure with less retentive features than my improved base plate, and there are no tethered pins.

(8) Paratech Incorporated produces a vehicle stabilization unit with strut extensions made of aluminum alloy tubing. Each strut extension has a spring loaded locking pin to connect to a strut extension. It also comprises rigid aluminum structures such as base plugs of different lengths and is designed for low clearance use with a variety of base and end plates. Paratech, Incorporated also markets a tripod conversion kit which attaches to a rescue strut, and with extensions for tripod use as a jack stand and/or high support. This kit is designed for trench rescue, building collapse and vehicle stabilization with its corresponding trench rescue struts.

(9) Unlike my invention, the Parach kit is intended primarily for trench shoring and converts to a vehicle support kit with one adapter. Furthermore, unlike Paratech my improved vehicle support kit comprises two extending pistons. My invention has two telescoping piston, but it has eliminated Paratech's heavy cumbersome collars. Paratech Inc.'s Danish multi-brace comprises a support kit which is specifically only for buildings. In contrast, my kit is equally well suited for both vehicles and buildings in an emergency situation. In addition Paratech's piston falls from the cylinder, unlike my kit pistons which are prevented from falling from the cylinder or intermediate piston by knurled rings, *infra.*

(10) AiRSHORE International markets a ART Lite® vehicle stabilization kit comprising four adjustable stabilization struts with extensions and attachments. There is a locking aluminum support structure for vertical, horizontal and angled support for vehicles. The

ART Lite kit has two extensions as well as a 15 degree swivel attachment within a base plate.

(11) However, the AiRSHORE kit base plate does not have extending arms for three-point attachment with ratcheting straps. Neither does the AiRSHORE base plate comprise (i) small studs which grip or provide friction against the support surface; or (ii) apertures for driving stakes through the base plate and into the supporting surface such as grass. The AiRSHORE kit also comprises loose components which are easily misplaced during crises. In contrast, my straight metal détente pins with compressible beads, *infra,* are tethered to the telescoping device and base plate, and are always available in an emergency.

(12) To prevent the single piston from falling away from of the cylinder, the AiRSHORE device comprises a collar with T-handles which prevent loosening of the single piston. In contrast, my two telescoping pistons are prevented from falling from the cylinder or intermediate piston by knurled rings, *infra.* My knurled rings are much less cumbersome and have knurled surfaces for grasping with thick gloves. In addition, my novel knurled rings do not require T-handles to insure a tight grip of the piston, unlike the AiRSHORE device.

(13) In addition, AiRSHORE does not have a universal adapter for interchangable distal end attachments, including those of prior art manufacturers.. Without a universal adapter, the AIRSHORE device cannot use diverse prior art attachments to contact the vehicle or

building. Instead, each AiRSHORE attachment has a rounded bottom surface which inserts within the most distal end of single piston of its vertical support component.

(14) In contrast, my universal adapter inserts within the distal end of the distal second piston. It's upper end is shaped so other manufacturers' prior art attachments fit over the upper part of the universal adapter, and are attached thereto with a straight metal détente pin with a compressible bead. For example, compatible prior art attachments with my telescoping device include components of hydraulic rescue tools.

(15) The CRUTCH vehicle stabilization system is positioned on the roof side of a rollover vehicle. A second CRUTCH is located along the undercarriage, opposite and across from the first unit. Used in pairs, each CRUTCH consists of steel tubing that adjusts from 48 inches length to a fully extended length of 76 inches. As the upper tube telescopes to the required length, it is pinned in place, and adjusting the length allows the operator to obtain the optimum angle of 75 degrees.

(16) The upper end of each CRUTCH tubing accepts a two-headed accessory with a rod which fits into openings or corner areas. This two-headed accessory also comprises a flat insertion plate end which fits within the hood, trunk and fender seams of vehicles. Each CRUTCH has an attached base plate secured by a ratchet device, one inch-wide webbing and steel hooks. The metal hooks on the web attach to relatively stable lower points along the vehicle. The base plates are held together with ratchet straps.

(17) Unlike my kit, the CRUTCH system comprises square metal tubing for its vertical support, which is structurally weaker than my round pistons and cylinder with thicker walls. In addition, the CRUTCH base plate is more of a metal foot similar to that of AiRSHORE supra, and the CRUTCH base plate does not have the substantial weight of my improved base plate.

(18) RESCUE 42, INC. markets a kit known as a TeleCribbing™ Stabilization System with TC™ struts. This system is designed for extrication and light structural support during rescue or salvage. Telescoping sections interlock and are held in place by pins. The contact attachments rotate and position with a ratchet strap which pulls the TC™ strut bases toward each other. The TeleCribbing™ system comprises tabs which prevent telescoping sections from falling from each other.

(19) However, because the vertical support section is square in cross-section, the vertical support cannot rotate, but instead must follow a channel within each telescoping section. The TeleCribbing™ base plate does not provide three-point ratcheting strap attachment as does my kit. Furthermore, this TeleCribbing™ system is not designed for support of heavy structures because it simply does not have the materials or structural strength. In contrast, my support kit is adaptable to both light support applications such as a damaged building, as well as motor vehicle accidents.

(20) In contrast to all the above prior art, my improved emergency vehicle support kit comprises all the advantages of: (i) knurled rings with interior circular lips to prevent

telescoping parts from falling from each other; (ii) a substantial base plate with additional structural features for strength and attachment of ratcheting straps; (iii) a universal piston adapter; and (iv) swivel support base plate adapter. The interior circular lip of each knurled ring engages the lower first piston end and/or the lower second piston end, as the case may be. Each corresponding interior circular lip prevents the first or second piston from exiting the cylinder distal end or distal first piston end respectively.

(21) Furthermore, my kit operates manually and no pneumatic source of pressure or force is present. My kit also remains rust-free indefinitely because it is comprises only aluminum and stainless steel, thereby minimizing maintenance costs.

SUMMARY OF THE INVENTION

(22) In the best mode and preferred embodiment of my improved emergency vehicle support kit, there is no pneumatic source for extension force of the telescoping device. Instead the operator manually extends the telescoping two pistons until he or she feels resistance from an opposing vehicle (or building) surface. In all embodiments, my invention includes first and second pistons with attached cylinder, a supporting vehicle base plate and a swivel base plate adapter.

(23) The preferred embodiment and best mode also include attachments which lodge within, or grasp, a crashed motor vehicle and provide the supporting contact. In other embodiments, the kit includes attachment which contact a building in danger of collapse. Other embodiments comprise diverse upper endplate structures such prior art U-shaped end-plates with appropriate adapters. Other piston attachments for contacting a vehicle or building are also within the scope of my invention.

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(24) Another new feature of my shoring device is a reinforced support base plate. Studs on the base plate lower surface insert into a supporting surface for stabilization. Along the base plate top surface are two integral elevated base plate walls which contain a swivel base plate adapter in a swiveling position through an angle of approximately 140 degrees. Also along the top surface of my supporting base plate are numerous circular apertures. These circular apertures contain removable stakes if additional stabilization is

necessary; the operator then drives the stakes into the supporting surface to immobilize the base plate.

(25) Elevated base plate walls are engineered along their interior surfaces to enclose and attached my new swivel base plate adapter, *infra,* when swivel base plate adapter rotates through approximately 130 degrees. In the preferred embodiment and best mode there are two aligned opposing apertures within the proximal edges of the two opposing elevated base plate walls. During operation, a metal détente ring pin with a compressible bead inserts within these two aligned opposing apertures. This pin attaches to a ratcheting cord or strap which can also incorporate an S-hook or other metal connecting device. A metal detente ring pin with a compressible bead then stabilizes the base plate by opposing force from the building or vehicle through the cord or strap, in a manner well known in this particular industry.

(26) My swivel base plate adapter is an attachment into which the lowermost end of the cylinder inserts, either perpendicular or at an angle to, the vehicle support base plate upper surface. A swivel base plate adapter sits within the elevated base plate walls and is attached with a second metal détente ring pin through a second set of opposing aligned mid-line apertures. There is one such opposing aperture within each elevated base plate wall.

(27) With the swivel base plate adapter attached within the vehicle support base plate by second metal détente pin, the rescuer inserts the lowermost proximal cylinder end within

the swivel base plate adapter. He or she then secures the lowermost proximal cylinder end by using a third straight metal detente ring pin with a compressible bead. Once inserted, the telescoping device attaches to the swivel base plate adapter (1) at an angle; or (2) perpendicular to supporting surface 8.

(28) The rescuer next inserts a straight metal détente pin with compressible bead at the appropriate pre–selected protruding piston, for contact along the downed vehicle or building. A second operator then attaches a ratcheting strap to the support base plate and vehicle. He or she ratchets the vehicle and base plate together prior to manually releasing the telescoping device which now supports the vehicle or building wall.

(29) With the telescoping cylinder and pistons of the kit, engagement with an inner circular lip of each of two outer knurled rings occurs automatically. Each inner circular lip prevents each piston from falling from the cylinder. My invention also comprises one cylinder end plug at the lower proximal end of cylinder. This cylinder end plug is hollow at its proximal end for attachment to swivel base plate adapter. The first and second piston proximal end plugs are solid metal. Each piston end plug catches its corresponding knurled ring interior circular lip, thereby preventing each piston from disengaging beyond its knurled ring.

(30) First and second pistons each have pre-determined axial longitudinal lengths, as well as diameters and wall thickness. First and second pistons preferably are approximately 35 (thirty-five) inches and 33 (thirty-three) inches in length respectively.

However, other lengths are also within the scope of my improved emergency vehicle support kit. The uppermost second piston, which has a smaller diameter than first intermediate piston (and the intermediate first piston has a smaller diameter than the cylinder) reversibly slides into and/or protrudes from, the first piston distal end.

(31) Both first piston and second piston comprise linearly aligned opposing apertures along their respectively axial longitudinal lengths. At each set of opposing apertures a metal détente ring pin inserts to attach the first piston to second intermediate piston at different aperture intervals along the second piston. The specific predetermined two opposing apertures of inserted (male) second piston and first receiving (female) piston and thereby secured by the metal détente ring pin through all four aligned apertures. The pre-selected length of the second piston which protrudes from the first piston distal end depends upon the required extended length for a particular application.

(32) The cylinder distal end also comprises two opposing sets of aligned cylinder apertures immediately below the attached knurled metal connector ring. The proximal end of the first piston is congruently aligned with two opposing cylinder apertures. The straight metal detente ring pin with a compressible bead then inserts through all six apertures to maintain a totally retracted position.

(33) Accordingly, it is a purpose of the present invention to provide a swivel support base plate which rotates through approximately 130 degrees.

(34) Another purpose of the present invention is to provide a telescoping second piston which is intended to support a heavy weight from a vehicle or building.

(35) Another purpose of the present invention is to provide knurled rings which prevent the first piston and second piston respectively from falling from the distal ends of the cylinder and first piston respectively.

(36) Another purpose of the present invention is to provide knurled rings which provide an improved gripping surface for rescuers wearing thick gloves.

(37) Another purpose of the present invention is to provide a swivel adapter which need not be removed and reinserted for a vertical or pre-selected angled position.

(38) Another purpose of my invention is to provide a distal universal adapter which can attach to my improved attachments, as well as prior art attachments, to the distal end of the second piston.

(39) These purposes and other features of the preferred embodiment and best mode are set forth in the detailed description of the invention and drawings, *infra*.

BRIEF DESCRIPTION OF THE DRAWINGS

(40) Figure 1 illustrates an assembled improved emergency vehicle support kit with a double-blade attachment.

(41) Figure 2 illustrates a partially collapsed lateral view of the assembled improved emergency vehicle support kit of Figure 1.

(42) Figure 3 illustrates an exploded view of the improved emergency vehicle support kit of Figure 1.

(43) Figure 4 illustrates an isolated longitudinal cross-sectional view of a segment of the telescoping device with knurled rings, first piston end plug and second piston end plug.

(44) Figure 5 illustrates an upper partial plan view of the vehicle support base plate.

(45) Figure 6 illustrates a partial lateral view of the vehicle support base plate.

(46) Figure 7 illustrates a partial lower plan view of the vehicle support base plate.

(47) Figure 8 illustrates an upper plan view of the vehicle support base plate.

(48) Figure 8A illustrates a detailed isolated view of a protuberance along an elevated base plate wall as indicated in Figure 8.

(49) Figure 9 illustrates a cross-sectional view of a vehicle support base plate of Figure 1 through view lines 9-9.

(50) Figure 10 illustrates a partial perspective view of a swivel base plate adapter.

(51) Figure 11 illustrates a lateral view of the swivel base plate adapter of Figure 10.

(52) Figure 12 illustrates a partial phantom lateral view of the swivel base plate adapter of Figure 10 within a vehicle support base plate, and with a superimposed end-plug segment in phantom.

(53) Figure 13 illustrates a cross-sectional view of the swivel base plate adapter of Figure 10 which inserts into the vehicle support base plate at an angle in phantom.

(54) Figure 14 illustrates an isolated exploded view of a cylinder segment into which a cylinder end plug inserts, and with the cylinder end plug inserting over the swivel base plate adapter.

(55) Figure 15 illustrates a lateral view of a doubled bladed attachment inserted over a universal adapter, and the universal adapter inserted within a distal second piston

(56) Figure 16 illustrates an isolated close-up partial perspective view of a double-blade attachment.

(57) Figure 16 illustrates a close-up isolated partial perspective of a conical attachment.

(58) Figure 17 illustrates a close-up isolated partial perspective view of a concial attachment.

(59) Figure 18 illustrates my improved emergency vehicle support kit propping a vehicle and assisted by a ratcheting strap attached to the vehicle base plate support plate.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT AND BEST MODE OF THE INVENTION

Introduction

(60) Referring to Figure 1 of the preferred embodiment, my improved emergency vehicle support kit 100 comprises a telescoping device 104. Telescoping device 104 comprises a lower cylinder 101, an intermediate first piston 102 and uppermost second piston 103. There are also associated connectors, attachments and a vehicle support base plate 580. Vehicle support kit 100 is particularly suited for support of overturned vehicles during rescue, and kit 100 only requires manual force for operation.

(61) Telescoping device 104 is preferably approximately (i) one hundred and five inches in longitudinal axial length in its maximum extended configuration; and approximately (ii) thirty-seven and one-half inches at its maximum collapsed and retracted configuration (in which only cylinder 101 is visible). When fully extended and standing within vehicle support base plate 580, *infra,* telescoping device 104 exhibits a minimum failure load of 14.2 kips (where one kip = 1,000 pounds) with overall buckling. When only intermediate first piston 102 is extended, second piston 103 remains retracted, and telescoping device 104 stands within vehicle support base plate 580, the minimum load at which fracture of the universal adapter 700, *infra,* occurs is 40.3 kips.

However, other diameters and lengths are also within the scope of my invention.

Cylinder 101

(62) Referring now to Figures 1 and 2, cylinder 101 is the bottom proximal component of telescoping device 104 and comprises a cylindrical wall 101f. Cylinder 101 is preferably approximately thirty-seven and one-half inches in length and approximately three inches in interior diameter. Cylinder wall 101f is preferably approximately one-quarter inch thick. Cylinder 101 has a proximal cylinder end 104a and a distal cylinder end 104b.

(63) Cylinder 101 also comprises first and second opposing distal cylinder pin apertures 114a, 114b respectively, and third and fourth distal cylinder pin apertures 118a, 118b respectively. Linearly aligned distal first and second cylinder pin apertures 114a, 114b are approximately 180 degrees (along cylinder wall 101f) from linearly aligned third and fourth cylinder pin apertures 118a, 118b.

(64) Linearly aligned first and second distal cylinder pin apertures 114a, 114ab are approximately one and one-quarter inches apart from each other, as are linearly aligned distal third and fourth cylinder apertures 118a, 118b from each other. Each distal first and third distal cylinder pin aperture 114a, 118a respectively is closest to distal cylinder end 104b. Each first and third distal cylinder pin aperture 114a, 118a respectively is approximately two and one-quarter inches from distal cylinder end 104b.

(65) Still referring to Figure 2, at proximal cylinder end 104a are first and second opposing cylinder cap screw apertures 161f,161g respectively. Each cylinder cap screw aperture 161f, 161g is approximately 180 degrees from the other along cylindrical wall 101f. Cylinder cap screw apertures 161f,161g congruently align with cylinder end plug screw apertures 161a,161b to attach cylinder end plug 155 to proximal cylinder end 104a, *infra.*

Proximal cylinder end plug 155

(66) Referring to Figures 2, 3 and 14, in the preferred embodiment and best mode proximal cylinder end plug 155 attaches to lowermost cylinder proximal end 104a by (i) first and second stainless steel first and second button-head socket cap screws 160a, 160b respectively through (ii) opposing first and second cylinder end plug apertures 161a, 161b respectively. Stainless steel button-head socket cap screws 160a, 160b oppose each other at approximately 180 degrees along cylinder wall 101f. Proximal cylinder end plug 155 abuts proximal cylinder end 104a by circular end plug ledge 155a. Inserted first and second stainless steel button head socket cap screws 160a, 160b are each approximately one-half inch from cylinder proximal end 104a.

(67) Referring to Figure 14, the proximal inner diameter of cylinder end plug interior 155d at proximal cylinder plug end 154a is approximately two and one-quarter inches. Proximal cylinder end plug interior 155d is designed to reversibly receive swivel base plate adapter 600, *infra.* Proximal cylinder plug end wall 155f is preferably approximately one-half inch in thickness at proximal cylinder plug end 154a. Cylinder

end plug 155 comprises a intermediate positioned circular end plug ledge 155a which is flush with cylinder wall 101f.

(68) Still referring to Figure 14, proximal cylinder end plug interior 155d is approximately two inches in depth and contains cylinder end plug apertures 161c, 161d. Cylinder end plug apertures 161c, 161d oppose each other at approximately 180 degrees along cylinder wall 101f. Each cylinder end plug aperture 161c,161d is approximately five-eighths inch in diameter. Cylinder end plug pin apertures 161c, 161d are aligned, so first straight metal détente ring pin with a compressible bead 151a inserts within both cylinder end plug pin apertures 161c, 161d, as well as congruently aligned upper swivel support plate adapter apertures 601a, 601b, *infra.*

(69) Solid metal upper distal end plug end 155j is approximately two inches in cylindrical height. Distal end plug end 155j inserts within proximal cylinder end 104a so cylinder end plug ledge 155a is flush with cylinder wall 101f. Cylinder end plug ledge 155a is approximately one inch in cylindrical height and one–quarter inch in thickness at distal ledge end 155aa.

Intermediate first piston 102

(70) Referring initially to Figure 1 of the preferred embodiment, intermediate first piston 102 is cylindrical in shape. Piston 102 comprises a first piston cylindrical wall 102k which is approximately (i) thirty-five inches in longitudinal axial length, and (ii) two and five-eighths inches in inner diameter. However, other lengths and diameters are also within the scope of my invention. First cylindrical piston wall 102k is approximately one-

quarter inch in thickness. Proximal first piston 102 is narrower in diameter than cylinder 101, and first piston 102 reversibly inserts into distal cylinder end 104b.

(71) Referring to Figure 3 of the preferred embodiment, proximal first piston 102 has a proximal first piston end 102a and a distal first piston end 102b. Intermediate proximal first piston 102 also comprises four linearly aligned parallel sets 130, 131,132, 133 of individual first piston apertures 134. First piston apertures 134 are each preferably approximately three-quarters inch in diameter. First piston aperture sets 130, 131, 132, 133 are linearly aligned along the axial longitudinal axis of first piston 102.

(72) Still referring to Figures 1, 2 and 3, each first piston aperture set 130, 131, 132, 133 is preferably approximately 90 degrees from each adjacent aligned set. First piston apertures 134 within each set 130, 131, 132, 133 are also preferably staggered in alternating alignment from adjacent aperture sets 130, 131, 132, 133. Opposing first piston aperture sets 130/132 and 131/133 are approximately 180 degrees from each other along first piston wall 102k. Second straight metal détente ring pin with compressible bead 151b inserts simultaneously through two opposing first piston apertures of sets 130/132 or 131/133, as well as congruently aligned cylinder apertures 114a, 118a or 114b, 118b.

(73) Each first piston aperture 134 within a linearly aligned first piston aperture set (such as set 132) is approximately one and one-quarter inches from adjacent first piston aperture 134 within that same set 132. Each first piston aperture set 130, 131, 132, 133

preferably comprises fifteen linearly aligned first piston apertures 134. However, adjacent first piston aperture sets 130/131 or 132/133 are staggered so first piston apertures 134 of one set are positioned midway between apertures of adjacent sets along first piston wall 102k. Four linearly aligned first piston aperture sets 130, 131, 132,133 are preferred, but other numbers of linearly aligned sets are also within the scope of my invention. As seen in Figure 4, as first piston 102 inserts into cylinder 101 there is a resulting continuous longitudinal space 444a between cylinder wall 104f and first piston wall 102k. This space 444a is approximately one–sixteenth of an inch in width. First and second piston end plug apertures 102s, 102t respectively each contain one screw 163a, 163b respectively, which attach end plug 156 to first piston proximal end 102a.

Proximal first piston end plug 156

(74) As best seen in Figures 3 and 4, proximal first piston end 102a is capped by proximal first piston end plug 156. Proximal first piston end plug 156 comprises a solid metal first piston cylindrical end 156a which fits within proximal first piston end 102a. Proximal first piston end plug 156 also comprises integral circular flat first piston cap 156b. Proximal first piston end plug cylindrical end 156a is approximately one and one-half inches in cylindrical height and two and one-quarter inches in diameter.

(75) Circular flat first piston cap 156b is approximately three inches in diameter and one-half inch in thickness. First piston cylindrical end 156a contains first and second opposing first piston end plug apertures 156g, 156h respectively. Apertures 156g, 156h respectively receive third and fourth stainless steel flat-head socket cap screws 163a,

163b respectively, for attachment of proximal first piston end plug 156 to proximal first piston end 102a.

Uppermost distal second piston 103

(76) Referring to Figures 1, 2, 3 and 4 of the preferred embodiment, uppermost distal second piston 103 comprises a continuous cylindrical second piston wall 103kk. Cylindrical second piston wall 103kk is approximately thirty-three inches in axial longitudinal length, and approximately one and three-quarters inches in inner diameter (i.e, from inner cylindrical wall surface 103d). However, other lengths and diameters are also within the scope of my invention, as long as distal uppermost second piston 103 can totally insert within first piston 102.

(77) Cylindrical second piston wall 103kk is approximately one-quarter inch in thickness. Uppermost distal second piston 103 is narrower in diameter than first piston 102, into which second piston 103 reversibly inserts by sliding. Uppermost distal second piston 103 has a proximal second piston end 103a and a distal second piston end 103b. Proiximal piston end 103a comprises two opposing apertures 103s, 1035 for attachment with screws 163r, 163s through end plug 158.

(78) Referring to Figures 1 and 2, along its longitudinal axis distal second piston 103 comprises two linearly aligned parallel sets of first and second opposing second piston aperture sets 128,129 respectively. Each second piston aperture set 128, 129 comprises individual second piston apertures 135. Second piston apertures 135 are each

approximately three-quarters inch in diameter. Each second piston aperture set 128,129 is preferably approximately 180 degrees from its opposing aligned second piston set 129. However, other numbers of linearly aligned piston aperture sets are also within the scope of my invention.

(79) Still referring to Figure 3, each second piston aperture 135 is approximately one and one-quarter inches from each adjacent second piston aperture 135 within its respective second piston apertures set 128, 129. Opposing second piston apertures 135 align so third straight metal détente ring pin with compressible bead 151c inserts through (i) two opposing second piston apertures 135 of each set 128, 129 simultaneously, with (ii) congruently aligned opposing first piston apertures 134 from opposing sets 133/ 131 or 130/132 as the case may be.

(80) As seen in Figure 4, when uppermost second piston 103 completely inserts within first piston 102, there is a resulting continuous longitudinal space 444b of approximately one-sixteenth inch between piston wall 103kk and first piston wall 102k. This space facilitates manual removal and insertion of second piston 103 within wider first piston 102.

Proximal second piston end plug 158

(81) Still referring to Figures 3 and 4, proximal second piston end 103a is capped by solid metal proximal second piston end plug 158. Proximal second piston end plug 158 comprises a solid metal second piston end plug cylindrical end 158a, and end 158a fits

within proximal second piston end 103a. Proximal second piston end plug 158 also comprises integral circular flat second piston cap 158b. Second piston end plug cylindrical end 158a is approximately one and one-quarter inches in cylindrical height, and one and five-eighths inches in diameter.

(82) Circular flat second piston cap 158b is approximately two and one-quarter inches in diameter and one-half inch in thickness. Second piston end plug cylindrical end 158a contains first and second opposing second piston end plug apertures 158g, 158h respectively. Second piston end plug apertures 158g, 158h oppose each other at approximately 180 degrees and congruently align with apertures 103s, 103t respectively. Second piston end plug apertures 158g, 158h respectively receive first and second stainless steel flat-head socket cap screws 163r, 163s respectively, for attachment of proximal second piston end plug 158 to proximal second piston end 103a. When so attached, proximal second piston end plug 158 is flush with second piston cylindrical wall 102kk at circular second piston cap 158b. First and second piston end plugs 156, 158 respectively prevent distortion of proximal ends 102a,103a.

Knurled cylinder ring 400

(83) Referring now to Figures 1, 2, 3, 4 and 15, attached to cylinder distal end 101b is first knurled cylinder ring 400. First knurled cylinder ring 400 is approximately four inches in outer diameter, three and one-half inches in inner diameter at proximal knurled edge 400aa, three inches in inner diameter at distal knurled edge 400bb, and two inches

in height of cylindrical knurled wall 400c. As seen in Figure 4, first knurled cylinder ring 400 also comprises

(i) an upper distal knurled wall thickness 400a of approximately five-eighths inch; and

(ii) a lower proximal knurled wall thickness 400b of one-quarter inch.

(84) Cylindrical knurled wall 400c comprises first and second knurled apertures 400f, 400g respectively, which oppose each other at approximately 180 degrees. Each knurled aperture 400f, 400g receives a corresponding first and second knurled stainless steel flat-head socket cap screw 400h, 400i respectively to attach first knurled cylinder ring 400 to distal cylinder end 104b. As seen in Figure 15, at approximately 90 degrees to both knurled apertures 400h, 400i is knurled round head screw 400p. Knurled screw 400p connects metal lanyard 171a to second straight metal détente ring pin with compressible bead 151b. Second straight metal détente ring pin with compressible bead 151b simultaneously inserts through congruently aligned cylinder apertures 114a, 118a or 114b, 118b and first piston apertures 131/133 or 130/132 as the case may be.

(85) As seen in Figures 4 and 15, integral with distal knurled edge 400bb and knurled interior surface 400j of cylindrical knurled wall 400c is interior circular lip 400k. Interior circular lip 400k is approximately three-eighths inch in width and one-half inch in height. Cylinder knurled ring 400 slides onto cylinder distal end 104b until there is abutting contact of interior circular lip 400k with cylinder distal end 104b. Cylinder knurled ring 400 prevents first piston 102 from disengaging with distal cylinder end 104b.

Knurled first piston ring 401

(86) Still referring to Figures 1, 4 and 15, in the preferred embodiment first piston knurled ring 401 is identical in structure and function, and material composition to knurled cylinder ring 400. First piston knurled ring 401 attaches to first piston distal end 102b. Knurled first piston connector 401 is approximately three and five-eighths inches in outer diameter; three inches in inner diameter at proximal knurled edge 401aa; two and three-eighths in diameter at distal knurled edge 401bb; and one and one-half inches in height of first piston cylindrical knurled wall 401c. First piston knurled ring 401 also comprises:

(i) a proximal first piston knurled wall thickness 401a of approximately three-eighths inch; and

(ii) a distal first piston knurled wall thickness 401b of approximately five-eighths inch.

(87) First piston knurled ring 401 comprises first and second knurled piston apertures 401f, 401g respectively, which oppose each other at approximately 180 degrees. Each knurled first piston aperture 401f, 401g receives a corresponding first and second knurled stainless steel button-head cap screws 401h, 401i respectively. Screws 401h, 401i attach first piston knurled ring 401 to distal first piston end 102b. At approximately 90 degrees to both knurled first piston apertures 401h, 401i is round head first piston screw 401pp. Screw 401pp connects metal lanyard 171b to fourth straight metal détente ring pin with compressible bead 151c. Fourth straight metal detente ring pin with compressible bead 151c simultaneously inserts within congruently aligned first piston pin apertures 134 and second piston opposing pin apertures 135 within their appropriate sets.

(88) Integral to distal wall interior 401j of knurled first piston wall 401c is interior circular lip 401k. Interior circular lip 401k is approximately three-eighths inch in width and one-half inch in longitudinal length. First piston knurled ring 401 slides over and downward upon upper first piston distal end 102b until there is abutting contact between interior circular lip 401k and first piston distal end 102b.

Universal attachment adapter 700

(89) Referring to Figures 1, 2, 3 and 15, at uppermost distal second piston end 103b is universal attachment adapter 700. Universal attachment adapter 700 comprises an upper universal aperture end 700a, an integral intermediate circular adapter plate 700b, and an integral grooved universal cylindrical bottom 700c. Universal attachment adapter 700 is approximately four and five-eighths inches in total height.

(90) Upper universal aperture end 700a is attached to upper universal plate surface 700bb, and upper universal aperture end 700a is approximately rectangular in longitudinal cross-section. Opposing first and second universal rectangular sides 700c, 700d respectively contain continuous opposing first and second universal apertures 700e, 700f. Universal adapter apertures 700e, 700f form a continuous channel 700g through upper universal aperture end 700a for insertion of fifth straight metal détente ring pin with compressible bead 151e. Preferably upper universal aperture end 700a is approximately one and one-half inches in width, two inches in height, and one and one-quarter inch in depth.

(91) Still referring to Figure 15, integral intermediate universal circular plate 700b is approximately two and one–half inches in diameter and approximately five-eighths inch in thickness. Universal circular plate 700b abuts uppermost distal second piston end 103a with an abutting universal ledge 700i of approximately three-eighths of an inch in width. Integral grooved universal cylindrical bottom 700c is approximately (i) one and three-quarters inches in diameter; and (ii) one and seven-eighths inches in height.

(92) Approximately three-sixteenths inch from universal cylindrical bottom surface 700j is universal circular groove 700p. Universal circular groove 700p follows the circumference of lower grooved cylindrical bottom 700c at this three-sixteenths inch increment. Universal circular groove 700p is approximately one-quarter inch in width and one–eighth inch in depth.

(93) Lower grooved universal cylindrical bottom 700c inserts into uppermost distal second piston end 103b until plate abutting ledge 700i contacts piston end 103b. Universal circular groove 700p stabilizes universal attachment adapter 700 with first and second opposing universal set screws 700m, 700n. Universal set screws 700m, 700n protrude interiorly through second piston wall 103kk and tightly abut grooved universal cylindrical bottom 700c within universal circular groove 700p. Set screws 700m, 700n protrude into and lodge tightly within circular groove 700p at approximately 180 degrees from each other.

Attachments to universal attachment adapter 700

Double-bladed attachment 650

(94) Referring now to Figures 1, 2, 3, 15 and 16, universal attachment adapter 700 attaches double-blade attachment 650 at uppermost second piston distal end 103b. Double-blade attachment 650 is approximately three inches in width 650aa; three and five-eighths inches in maximum height 650bb; and one and one-half inches in depth 650cc at double-bladed base 650cc.

(95) Double-blade base 650p comprises a first blade leg 650q and a second blade leg 650r. Each blade leg 650q, 650r respectively contains a corresponding first and second round blade leg aperture 650s, 650t respectively. When blade leg apertures 650s, 650t congruently align with and over universal adapter apertures 700e, 700f, fifth straight metal détente ring pin with compressible bead 151e simultaneously inserts through all four apertures. Double-blade attachment 650 is thereby attached to distal second piston end 103b, when placed over upper adapter rectangular end 700a. When so attached, blade attachment legs 650q,650r rest upon universal circular adapter plate 700b.

(96) Still referring to Figure 16, double-blade attachment 650 has first and second solid metal blade ends 650a, 650b respectively. Blade edges 650a, 650b are approximately triangular in cross-section until double-blade longitudinal sides 650k, 650m partially converge towards double-blade base 650p. Each first and second uppermost blade edge 650c, 650d of each first and second metal blade 650a, 650b respectively, bevels downward towards interior flat blade segment 650e.

(97) Interior flat bade segment 650e is co-extensive and continuous with uppermost blade edges 650c, 650d. Each uppermost blade edge 650c, 650d is continuous with first and second sloping surface 650f, 650g respectively, which slopes to interior flat segment 650e. Each sloping surface 650f, 650g comprises first and second grids 650i, 650ii respectively. Each grid pattern 650i, 650ii comprises numerous small parallel attachment projections which are rectangular in cross-section. Each first and second longitudinal

opposing sides 650k, 650m respectively is flat and each longitudinal side 650k, 650m forms a "rabbit's head" profile which is continuous with each first and second double-blade leg 650q, 650r respectively. Double-blade attachment 650 is specially engineered to grip metal ledges and other elevations and protrusions along crashed motor vehicles.

Conical attachment 660

(98) Referring now to Figure 17, also attachable to second piston universal adapter 700 is conical attachment 660. Conical attachment 660 comprises an upper distal cone 660a, and upper distal cone 660a is integrally attached (at its broadest base) to conical solid metal ring 660c at conical ring upper surface 660e. Upper distal cone 660a comprises cone grooves 660o. Cone grooves 660o extend from conical ring upper surface 660e, and grooves 660o terminate approximately half-way along upper distal cone 660a. Conical attachment 660 is approximately 7.0 (seven) inches in height and approximately 3.0 (three) inches in diameter at solid conical ring bottom surface 660f.

(99) Integrally attached to lower surface 660f of conical sold metal ring 660c are first and second opposing conical legs 660g, 660h respectively. Conical legs 660g, 660h are each approximately one and three-quarters inches in longitudinal length at lower conical ring surface 660f. Each conical leg 660g, 660h is also approximately three-quarters inch in maximum thickness along rounded bottom conical edges 660m, 660n respectively; and each conical leg 660g, 660h is approximately three-quarters inch in width. Each conical leg 660g, 660h is parallel to the other. Each first and second conical leg 660g, 660h comprises a first and second conical aperture 660j, 660k respectively. Conical apertures

660j, 660k align with each other so fifth straight metal détente ring pin with compressible bead 151e inserts within both apertures 660j,660k simultaneously.

(100) First and second conical apertures 660j, 660k respectively congruently align exterior to, and with, second piston universal adapter apertures 700e, 700f respectively. Conical attachment 660 slide over and down universal adapter 700 until conical apertures 660j, 660k congruently align with universal adapter apertures 700e, 700f. In this alignment, fifth straight metal détente ring pin with compressible bead 151e inserts through all four apertures 600j, 660k, 700e, 700f simultaneously. In this manner, fifth straight metal détente ring pin 151e attaches conical connector 660 (which slides downward over universal adapter 700) to uppermost distal second piston end 103b.

(101) Conical attachment 660 is best suited for insertion into a damaged vehicle to provide a contract point for telescoping device 104. Conical attachment 660 also provides safety for the operator, who initially inserts conical attachment 660 into a leverage position while remaining at a safe distance from vehicle 900 or a building.

Vehicle support base plate 580

(102) Referring now to Figures 1 , 2, 3 and 5, vehicle support base plate 580, combined with swivel base plate adapter 600 *infra,* supports vehicle telescoping component 104, either vertically or at an angle to support surface 8. Vehicle support base plate 580 is custom-made by Meskan Foundry and is made of 356-T6 aluminum sand casting.

Vehicle support base plate 580 has a proximal support base plate edge 580s and a distal support base plate edge 580t.

(103) Referring now to Figures 5 and 7, vehicle support base plate 580 preferably comprises a square metal plate with rounded edges. However, other shapes are also within the scope of my invention. Support base plate 580 is preferably approximately eleven inches in length and width, and one-half inch in thickness. Vehicle support base plate 580 has an upper base plate surface 580a and a lower base plate surface 580b. Vehicle support base plate 580 also comprises two triplets of base plate round openings 582a, 582b, 582c, and 582d, 582e, 582f (generically base plate round openings 582).

(104) As seen in Figure 2, base plate round openings 582 reversibly receive immobilization stakes 787 to drive into a supporting surface 8, thereby immobilizing support base plate 580. Each immobilization stake 787 is approximately 12 inches in length and approximately ¾ inch in diameter. Each immobilization stake 787 is cylindrical but tapers to a point and has a capped upper end. Prior art immobilization stakes 787 are available from BeerCoastGuard.com. As seen in Figure 7, lower base plate surface 580b comprises small protruding studs 583. Small protruding studs 583 are driven into the ground or other supporting surface 8 for additional immobilization.

(105) Referring now to Figures 5, 6, and 8 base plate upper surface 580a comprises opposing first and second elevated base plate walls 587, 588 respectively. Each elevated base plate wall 587, 588 is an integral part of supporting base plate 580. Each elevated

base plate wall 587, 588 is structurally identical to the other, so the following discussion designates the same features on each elevated wall 587, 588. Each elevated base plate wall 587, 588 is preferably approximately eleven inches in length and one and three-quarters inches in height at each elevated base plate wall midpoint 587m, 588m. Elevated base plate walls 587,588 are parallel to each other, and each elevated base plate wall 587,588 protrudes upward at a right angle from upper base plate surface 580a.

(106) Referring now to Figure 6, each elevated base plate wall 587, 588 comprises a proximal first aperture end 587a and a proximal second aperture end 588a. Each proximal aperture end 587a, 588a comprises a corresponding first and second strap aperture 587c, 588c respectively. Strap apertures 587c, 588c are parallel with each other. Referring to Figure 18, eighth straight metal detente ring pin with compressible bead 151h inserts simultaneously through both strap apertures 587c, 588c. Opposing first and second strap apertures 587c, 588c respectively are each approximately five-eighths inch in diameter. Each strap aperture 587c, 588c respectively is approximately one-quarter inch from proximal base plate end 580s at their respective most proximal points.

(107) As seen in Figure 18, attached ratcheting strap 779 attaches to seventh straight metal detente ring pin with compressible bead 151g to vehicle 900. Sixth immobilizing straight metal détente ring pin with compressible bead 151f attaches to vehicle base plate surface 580a by metal lanyard 171c. Metal lanyard 171c encircles round head metal screw 581a which inserts through vehicle support base plate 580. Please see Figure 1.

(108) As seen in Figure 18, vehicle 900 and support base plate 580 are thereby stabilized in a manner well known in the industry. Eighth straight metal détente ring pin with compressible bead 151h attaches to chain or ratcheting strap 779, with or without a hook or s-shaped metal connector. Chain or racheting strap 779 resists force from vehicle 900 or building wall upon vehicle support base plate 580 which causes skidding.

(109) Referring now to Figure 6 of the preferred embodiment, first and second elevated base plate wall 587, 588 respectively each have a corresponding

(i) interior elevated base plate wall surface 590a, 590aa respectively; and

(ii) exterior elevated base plate wall surface 590b, 590bb respectively.

Each elevated base plate wall 587,588 also comprises a circular midpoint aperture 592a, 592b. Circular midpoint apertures 592a, 592b respectively each completely penetrate each corresponding elevated base plate wall 587,588 respectively.

Along interior elevated base plate wall surfaces 590a, 590aa

(110) Referring now to Figures 6 and 8, continuously adjacent with and distal to proximal base plate end 580s along each interior elevated base plate wall surface 590a, 590aa are corresponding proximal first aperture end 587a and proximal second aperture end 588a. Each proximal aperture end 587a, 588a comprises a corresponding first and second strap aperture 587c, 588c respectively. Strap apertures 587c, 588c are aligned with and parallel to each other. Consequently, when eighth straight metal detente ring pin with compressible bead 151h inserts through both strap apertures 587c, 588c, ratcheting strap 779 attaches to détente pin 785 and vehicle 900, as discussed *supra*.

(111) Still referring to Figure 8, immediately distal to and continuous with, proximal first and second aperture ends 587a, 588a respectively, are first and second interior perpendicular extending wall segments 594a, 594b respectively. Each interior perpendicular extending wall segment 594a, 594b is approximately: one and one-half inches in longitudinal length; and seven-eighths inch in thickness. Interior perpendicular extending wall segments 594a, 594b are parallel to each other.

(112) Referring now to Figures 8 and 8A, each first and second interior perpendicular extending wall segment 594a, 594b respectively forms first and second continuous interior sloping protuberances 594c, 594d respectively. Each interior sloping protuberance 594c, 594d is approximately:

(113) (i) one and three-quarters inches in height at tallest point 594e, 594ee along each elevated base plate walls 587,588; and

(ii) one inch in depth at each proximal protuberance side 594ff, 594f along upper vehicle support base plate surface 580a; and

(iii) one and one-half inches in length at each protuberance longitudinal side 594gg, 594g along upper vehicle support base plate surface 580a; and

(iv) one-half inch in depth of distal protuberance side 594hh, 594h along upper vehicle support base plate surface 580a.

(114) Each continuous interior sloping protuberance 594c, 594d is continuous with and integral to, each corresponding interior perpendicular extending wall segment 594a, 594b. Each protuberance 594c, 594d forms a C-shaped curve thickness 594k. Each C-shaped curve thickness 594k extends along upper vehicle support base plate 580a, and each C-shaved curve thickness 594k terminates immediately below corresponding first and second strap apertures 587c,588c respectively. Each C-shaped curve thickness 594k also asymptotically slopes to

(i) vehicle support base plate upper surface 580a, and

(ii) simultaneously towards proximal protuberance sides 594f, 594ff respectively.

(115) Still referring to Figure 8, each continuous interior sloping protuberance 594c,594d integrally protrudes at each corresponding interior perpendicular extending wall segment 594a, 594b respectively. Referring to Figure 8A, each first and second continuous interior sloping protuberance 594c, 594d respectively forms first and second sloping small ridges 594m,594mm. Sloping small ridges 594m, 594mm are approximately perpendicular to upper vehicle support base plate surface 580a and are approximately five-eighths inch in width at each corresponding sloping small ridge midpoint 594s,594ss respectively.

(116) Each continuous interior sloping protuberance 594c, 594d is aligned and parallel to the other. Each protuberance 594c, 594d functions as a partial housing for ratcheting strap 789, and protuberances 594c, 594d also function as a device for "capturing" swivel base plate adapter 600, *infra.*

(117) Referring now to Figures 8 and 9, immediately distal to and continuous with first and second interior perpendicular extending wall segments 594a, 594b are first and second interior indented square wall segments 595a, 595b respectively. Each indented square wall segment 595a, 595b is approximately one and three-quarters inches in distal/proximal longitudinal length along upper vehicle support base plate surface 580a; and one-half inch in thickness through corresponding elevated base plate walls 587, 588 respectively. At each indented interior square wall segment 595a, 595b, elevated base plate walls 587,588 are separated from each other by approximately four inches. Each interior square wall segment 595a, 595b is parallel to and aligned with the other.

(118) Still referring to Figure 6, 8 and9, immediately distal to and continuous with, each indented square wall segment 595a, 595b respectively are corresponding first and second interior quadrilateral wall segments 593aa, 593bb respectively. Each interior quadrilateral wall segment 593aa, 594bb contains first and second circular mid-line apertures 592a, 592b respectively. Each mid-line aperture 592a, 592b aligns with the other, so seventh straight metal detente ring pin with compressible bead 151h easily inserts through both apertures 592a, 592b simultaneously.

(119) Each elevated base plate wall 587, 588 respectively is approximately one–half inch in thickness through each interior quadrilateral surface segment 593aa, 593bb respectively. Each segment 593aa, 593bb also has the same height as corresponding elevated base plate wall 587, 588 respectively. Each interior quadrilateral wall segment 593aa is parallel to and aligns with opposing quadrilateral wall segment 593bb.

(120) Still referring to Figures 6, 8 and 9, continuous with and immediately distal to first and second interior quadrilateral segments 593aa, 593bb respectively are corresponding first and second interior slanted wall segments 801a, 801b respectively. Each interior slanted wall segment 801a, 801b slopes downward from its respective elevated base plate wall 587 588, to vehicle support base plate upper surface 580a. Each slanted interior wall segment 801a, 801b integrally and continuously attaches to each interior elevated wall surface 590a, 590aa respectively. Each interior slanted wall segment 801a, 801b is also a surface upon which swivel vehicle base plate adapter 600 rotates, *infra.*

(121) Each interior slanted wall segment 801a, 801b is parallel to and aligned with the other. Each interior slanted wall segment 801a, 801b respectively is approximately three-quarters inch in thickness, in addition to each respective one–half inch elevated base plate wall thickness at the maximum height of each segment 801a, 801b (i.e, top of elevated base plate wall 587, 588). Each interior slanted extending wall segment 801a, 801b is approximately two and one-half inches in maximum height at the top of elevated base plate wall 587, 588. Each interior slanted wall segment 801a, 801b also forms an approximate 50 degree angle with upper vehicle support base plate surface 580a.

(122) Still referring to Figures 6 and 8, immediately distal to, and continuous with, each interior slanted wall segment 801a,801b are corresponding first and second four sided interior wall segments 597a, 597b respectively. Preferably, each four sided interior wall segment 597a, 597b is trapezoidal with its lowest edge continuous with and along vehicle

support upper base plate surface 580a. First and second four sided interior wall segments 597a, 597b are parallel and aligned with each other along each respective elevated base plate wall 587, 588.

(123) The height of each interior four sided wall segment 597a, 597b is greatest where each segment 597a, 597b meets the top of each elevated base plate wall 587, 588, i.e., approximately one and one-quarter inches. Each interior four sided wall segment 597a, 597b is approximately one and three-eighths inches in thickness at its junction with interior slanted wall segment 801a, 801b, and five inches in thickness above each distal end aperture 597e, 597f, *infra*. The length of each interior four sided wall segment 597a, 597b is approximately five inches along upper vehicle support base plate surface 580a; and three and one-quarter inches along the top of each elevated base plate wall 587, 588.

(124) Referring to Figure 6, each interior four sided interior surface 597a, 597b comprises first and second distal elevated wall apertures 597e, 597f respectively. Distal elevated apertures 597e, 597f align so a straight metal détente ring pin with compressible bead inserts within distal elevated apertures 597e, 597f simultaneously.

(125) Referring to Figures 6, 8 and 9, each first and second interior four sided wall segment 597a, 597b respectively is continuous with each corresponding first and second distal perpendicular surfaces 599a, 599b respectively. Each distal perpendicular surface 599a, 599b slants at an angle of approximately 10 degrees to vehicle support base plate upper surface 580a. Distal perpendicular surfaces 599a, 599b are parallel to each other.

Along exterior elevated base plate walls 590b, 590bb

(126) Referring now to Figures 5, 6, and 8 first and second exterior elevated base plate wall surfaces 590b, 590bb respectively comprise exterior rectangular longitudinal surfaces 567a, 567aa at proximal support base plate edge 580s. Each exterior rectangular longitudinal surface 567a, 567aa is approximately three and one-half inches in length along upper vehicle support plate surface 580a and parallel elevated base plate wall upper edge 598a, 598aa as the case may be. Each exterior rectangular longitudinal surface 567a, 567aa is approximately one and three-quarters inches in height. Exterior rectangular longitudinal surface 567a,567aa each comprise an exterior opening of each corresponding proximal strap aperture 587c, 588c respectively, *supra.*

(127) Continuous with each exterior rectangular longitudinal surface 567a, 567aa and distal to each interior perpendicular wall segment 594a, 594b respectively are corresponding first and second extending elevated base plate wall arms 590m, 590mm respectively. Each extending elevated base plate arm 590m, 590mm is integral with, and perpendicular to, upper base plate surface 580a. Each extending elevated base plate arm 590m, 590mm extends from elevated base plate wall exterior surface 590b, 590bb at an angle of approximately 60 to 70 degrees, and towards proximal elevated base plate edge 580s.

(128) Each extending elevated base plate arm 590m, 590mm is approximately three and one-quarter inches in length; one-half inch in thickness; and one and three-quarters inches

in height. As seen in Figure 5, each extending elevated base plate arm 590m, 590mm respectively comprises a first and second outer arm aperture 590n, 590nn respectively. Each outer arm aperture 590n, 590nn respectively is approximately five-eighths inch in diameter and approximately one-quarter inch from each arm outermost end 590p, 590pp respectively.

(129) A second and third arm ratcheting strap 779 drawn through each outer arm aperture 590n, 590nn respectively can attach vehicle support base plate 580 to two additional points along a crashed motor vehicle or weakened building. In this manner, there are two or three attachments to the building or vehicle which further stabilize the vehicle support base plate 580 and prevent it from sliding along support surface 8.

(130) Referring to Figures 5, 6, 8 and 9, immediately distal to and continuous with, first and second extending elevated base plate arms 590m, 590mm are first and second exterior middle longitudinal surfaces 885a, 885b. Each exterior middle longitudinal surface 885a, 885b is approximately three and one-quarter inches in length along the top surface of elevated base plate walls 587,588 respectively. Each exterior middle longitudinal surface 885a, 885b is approximately one and three-quarters inches in height.

(131) As seen in Figure 6, each exterior middle longitudinal surface 885a, 885b contains the external opening of one corresponding circular mid-line aperture 592a, 592b. Circular mid-line apertures 592a, 592b align with each other, so sixth straight metal détente ring

pin with compressible bead 151f inserts simultaneously through apertures 592a, 592b and channel 592c within swivel base plate adapter 600, *infra.*

(132) Still referring to Figures 5, 6, 8 and 9, immediately distal to and continuous with, each first and second exterior middle longitudinal surface 885a, 885b respectively are first and second exterior angled base plate surfaces 591a, 591b respectively. Each exterior angled base plate surface 591a, 591b is approximately one inch in longitudinal length along vehicle support base plate upper surface 580a and the tops of elevated base plate walls 587, 588. Each exterior angled base plate surface 591a, 591b is approximately one and one–half inches in height at its distal side; and one and three-quarters inches in height at its proximal side. Exterior angled base plate surfaces 591a, 591b each form an angle of approximately 65 degrees with exterior middle longitudinal surfaces 885a, 885b respectively.

(133) Continuous with and immediately distal to first and second exterior angled base plate surfaces 590a, 590aa respectively are first and second exterior distal end surfaces 586a, 586aa respectively. Each exterior distal end surface 586a, 586aa is approximately one and three-quarters inches in longitudinal length along vehicle support base plate upper surface 580a; and one and three-quarters inches in length along top elevated base plate wall edges 587a, 588aa. Each exterior distal end surface 586a, 586aa is approximately one and one-quarter inches in height at its distal side and one and one-half inches at its proximal side.

(134) Each exterior distal end surface 586a, 586aa contains exterior opening of corresponding first and second distal end apertures 597e, 597f. Distal end apertures 597e, 597f align with each other so a straight metal detente ring pin with compressible bead inserts within both distal end apertures 597e, 597f simultaneously. Each exterior distal end also comprises strap apertures ends 599a, 599b, which are approximately perpendicular to surface 580a.

Swivel vehicle base plate adapter 600

(135) Referring now to Figures 10 and 11, swivel base plate adapter 600 is approximately four and three-fourths inches in total length. Swivel base plate adapter 600 comprises a short solid metal adapter cylindrical upper component 601, and component 601 is approximately one and seven-eighths inches in cylindrical height. Adapter cylindrical upper component 601 has a flat circular top 601a which is approximately two and one-quarter inches in diameter. Adapter cylindrical upper component 601 also comprises first and second swivel adapter upper apertures 601b, 601bb respectively. Swivel adapter upper apertures 601b, 601bb oppose each other along at approximately 180 degrees.

(136) Still referring to Figures 10 and 11, Swivel adapter upper apertures 601b, 601bb are positioned approximately one inch from flat circular top 601a. Swivel adapter upper apertures 601b, 601bb comprise continuous swivel channel 601c. As seen in Figure 14, when cylinder end plug 155 fits over swivel adapter 600, then cylinder end plug apertures 161c, 161d, congruently align with continuous swivel channel 601c. Third straight metal détente ring pin with compressible bead 151c then simultaneously inserts through

cylinder end plug apertures 161c, 161d and swivel channel 601c. This insertion attaches cylinder 101 to upper swivel base component 601.

(137) Swivel base plate adapter 600 also comprises adapter circular plate 603 and lower partially cylindrical component 604, *infra*. Adapter circular plate 603 is approximately one-half inch in thickness and integrally attaches to upper swivel base plate component lower surface 601e. Adapter circular plate 603 has an upper circular flat surface 603a which attaches to upper component lower surface 601e. Upper and lower circular flat surfaces 603a, 603b each have a diameter of approximately three and one-half inches.

(138) Adapter circular plate 603 integrally attaches to lower partially cylindrical component 604 along lower circular flat surface 603b. Partially cylindrical component 604 comprises a rounded lower surface 604a. Rounded lower surface 604a is continuous with first and second opposing straight longitudinal sides 604e, 604ee respectively and lower circular flat surface 603b. Smooth opposing longitudinal sides 604e, 604ee are approximately perpendicular to rounded lower surface 604a.

(139) Still referring to Figures 10, 11 and 14, lower partially cylindrical component 604 is approximately three and one–quarter inches in length parallel to lower circular plate flat surface 603b; two inches in height parallel to opposing straight longitudinal sides 604e, 604ee; and one and one-half inches in width at lowest rounded surface 604a. Each opposing straight longitudinal side 604e, 604ee comprises the first and second opposing exterior openings 604f, 604ff respectively, of continuous lower swivel channel 604g.

(140) Sixth metal détente ring pin with compressible bead 151f inserts simultaneously inserts through lower swivel channel 604g and congruently aligned circular midpoint apertures 592a, 592b. When so inserted, sixth metal détente pin with compressible bead 151f attaches swivel base plate support adapter 600 to elevated base plate walls 587, 588. Sixth metal détente ring pin with compressible bead 151f thereby forms the physical axis around which swivel support base plate adapter 600 rotates.

(141) Swivel base plate adapter 600 does not contact interior elevated base plate wall surfaces 590a, 590aa when adapter 600 rotates around sixth metal détente ring pin with compressible bead 151f through an angle of approximately 130 degrees. Swivel base plate adapter 600 is stopped from further rotation by adapter circular plate 603 abutting

(i) elevated base plate upper surface 580a proximally; or

(ii) interior slanted wall segments 801a, 801b distally.

As seen in Figures 12, 13 and 18, vehicle support base plate 580 with attached vehicle swivel base plate adapter 600 can attach to cylinder end plug 155 at an angle to supporting surface 8.

(142) Still referring to Figure 18, after sixth straight metal détente ring pin with compressible bead 151f inserts through vehicle support base plate 580 and swivel base plate adapter 600 the operator tightens ratcheting strap 779 (which also attaches to vehicle 900 or a building). The weight of the unstable vehicle or building 900 stabilizes

supporting base plate 580 through ratcheting strap 779 tied thereto, in a manner well known in this particular industry.

Operation

(143) Referring again to Figure 1, in the best mode and preferred embodiment of my invention, my improved emergency vehicle support kit 100 operates as follows:

(1) The operator confirms that initially collapsed telescoping device 104 contains first and second pistons 102, 103 within attached cylinder 101.

(144) (2) He or she also confirms that:

(i) proximal cylinder end plug 155 is securely fastened within proximal cylinder end 104a by stainless steel button-head socket cap screws 160a, 160b; and

(iii) metal détente ring pins with compressible beads 151 are attached to knurled connector rings, knurled first piston connector ring 401, knurled cylinder connector ring 400, and vehicle support base plate 580 by appropriate metal lanyards 77 and screws.

(145) (3) The operator then attaches swivel universal base plate adapter 600 to vehicle support base plate 580 with eighth metal détente ring pin with compressible bead 151h.The operator attaches proximal cylinder end plug 155 to swivel universal base plate adapter 600 by seventh metal détente ring pin with compressible bead 151g. This attachment connects still initially collapsed telescoping device 104 to swivel base plate adapter 600.

(146) (4) The operator now manually extends first piston 102 (and second piston 103 if necessary) from within cylinder 101 until first distal piston end 102b, or second piston end 103b approach a potential stabilizing contact along the vehicle or collapsing building. If only first piston, or a portion thereof, is required for this pre-determined extension, then second piston 103 remains collapsed within first piston 102.

(5) Now the operator selects an appropriate attachment, such as conical attachment 660 or double-blade attachment 650 to universal attachment adapter 700, with sixth metal détente ring pin with compressible bead 151f.

(147) (6) The operator extends first piston 102, or first and second piston 102, 103, until conical or double-blade attachment 650, 660 contacts or grips the pre-selected contact point along vehicle 900 or building. Once contact is made, the operator confirms that vehicle 900 and extended telescoping device 104 stabilize each other. The operator also confirms that swivel support base plate adapter 600 is correctly angled within elevated base plate walls 587, 588. Then the operator attaches the ratcheting strap 789 from base plate 580 to vehicle 900 or building. This ratcheting between the base plate 580 and the structure thereby creates tension between the base plate 580 and the supported structure.

(148) (7) The operator then releases manual grip upon telescoping device 104 and the vehicle 900 or a building. The weight of vehicle 900 or building immobilizes the

telescoping device 104 into its angled or vertical position without further operator assistance.

(149) (8) A tow truck, or other device for "flipping" vehicle 900, releases the force which was originally supported solely by telescoping device 104.The rescuer then loosens the ratchet and removes the straight metal détente pin with compressible bead 151from which prevented the first piston 102 or second piston 103 from falling into the cylinder 101 and/or first piston 102.

Assembly

(150) In the best mode and preferred embodiment of my invention, assembly of my improved emergency vehicle kit 100 proceeds as follows:

(1) The operator initially inserts lowermost proximal cylinder end plug 155 into proximal end 101a of cylinder 101. He or she attaches end plug 155 to cylinder 101 with first and second stainless steel button-head socket cap screws 160a, 160b;

(151) (2) The operator next inserts proximal first piston end plug 156 into first piston proximal end 102a. He or she then attaches proximal first piston end plug 156 to first piston 102 with third and fourth stainless steel flat-head socket cap screws 163a, 163b respectively;

(3) He or she next inserts first piston 102 into the open distal cylinder end 101b until first piston 102 contacts cylindrical end plug 155 and therefore can insert no further;

(152) (4) The operator now positions knurled cylinder ring 400 over distal first piston end 102b. He/she attaches knurled cylinder connector ring 400 to cylinder 101 with first and second knurled stainless steel flat-head socket cap screws 400h, 400i respectively;

(5) Next, the operator inserts second piston proximal end-plug 158 into second piston proximal end 103a. He or she attaches second piston proximal end-plug 158 to second piston 103 with first and second stainless steel flat-head socket cap screws 163r, 163s respectively;

(152) (6) Second piston 103 is now inserted into distal first piston end 102b until it abuts proximal second piston end-plug 158 end and inserts no further;

(7) Knurled first piston circular ring 401 is positioned over distal second piston end 103b. The operator attaches knurled first piston circular ring 401 to distal first piston end 102b with first and second knurled stainless steel button-head cap screws 401h, 401i respectively.

(153) (8) Now the operator inserts distal second piston end universal adapter 700 into distal second piston end 103b. He or she attaches universal adapter 700 to distal piston end 103b with first and second opposing ¼" stainless steel set screws 141,142 respectively.

(154) (9) The operator now inserts swivel support base plate adapter 600 into proximal lowermost cylinder end 101a, and secures cylinder end 101a to swivel support base plate adapter 600 with metal detente ring pin with compressible bead 151g.

(10) The operator finally positions swivel support base plate adapter 600 within vehicle support base plate 580. He then inserts tethered détente ring pin with compressible bead 151h through support base plate 580 and swivel base plate adapter 600, thereby securing swivel base plate adapter 600 to vehicle support base plate 580.

Materials

(155) In addition to structure and design features, the strength of materials comprising my improved emergency vehicle support kit 100 are crucial.

(1) The preferred metal pins are available from:

PivotPoint

P.O. Box 488

Hustisford, Wisconsin 53034

(156) Straight metal détente ring pins with compressible bead (generically pins 151) have round "key rings" at the upper end of each pin to prevent slippage through piston apertures. The recommended models are:

(a) Most preferred: 5/8 inch by 3.5-inch detente ring pins with compressible beads and collars (12L14Carbon Steel Zinc w/ yellow chromate finish or stainless steel), where 5/8 inch is the diameter of the pin shaft;

(b) Also satisfactory: 5/8 inch by four and 3/4 inch ring pins with collars (Grade 5, 1144 carbon steel with zinc and yellow chromate finish).

Metal détente ring pins compressible beads 151 are preferably made of carbon steel or stainless steel.

(157) (2) Aluminum sand casted components such as cylinder end plug 155, first piston end plug 156, second piston end plug 158, distal piston universal adapter 700, conical attachment 660, double-blade attachment 650, and piston knurled rings 400, 401 are custom made by:

Louis Meskan Foundry

2007-13 North Major Ave.

Chicago, Illinois 60639

These 356 -T components are made by initially pouring molten metal into a mold and are designated in the industry as "sand castings."

(158) (3) Aluminum extruded cylinders 101 and pistons 102, 103 are custom made by:

Precision Extrusions

720 East Green Street

Bensenville, Illinois 60106

The preferred material for cylinder 101 is aluminum type 6061-T6, which is extruded, and then dipped in cold water in a process well known in this particular industry.

(159) (4) Swivel vehicle support base plate adapter 600 and vehicle support base plate 580 are also made by Meskan Foundry and consist of 356-T6 aluminum sand casting.

(160) All changes within the meaning and range of equivalency of the claims, are intended to be included therein. The above discussion describes the preferred embodiment and the best mode. The detailed description of my improved emergency vehicle support kit in no manner limits the spirit or scope of additional accessories, which are compatible with the scope of my invention.